



Liquid Chemicals North America TC Chapter

Meeting Summary and Minutes

SEMI Standards NA Spring Meeting 2025
 Tuesday, April 8, 2025, 13:00 – 15:00 Pacific
 Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

SEMI Standards NA Summer Meetings 2025
 Day 1: Tuesday, June 3, 13:00 – 16:00 Pacific
 Day 2: Wednesday, June 4, 13:00 – 16:00 Pacific
 SEMI Global Headquarters, Milpitas, California

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Don E. Hadder (Intel), David Kandiyeli (KESG), Laura Ledenbach (Evonik)

SEMI Staff: Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
<i>Air Liquide</i>	<i>Chen</i>	<i>Allen</i>	<i>Horiba</i>	<i>Webster</i>	<i>David</i>
<i>ATPC</i>	<i>Tregub</i>	<i>Alex</i>	<i>iii safety llc</i>	<i>Kennis</i>	<i>Ko</i>
<i>CT Associates, Inc</i>	<i>Schooneveld</i>	<i>Gary van</i>	<i>Kanomax FMT</i>	<i>Oberreit</i>	<i>Derek</i>
<i>Daikin America, Inc.</i>	<i>Nelson</i>	<i>Per</i>	<i>Kinetics Equipment Solutions Group</i>	<i>Kandiyeli</i>	<i>David</i>
<i>Engineered Machinery Inc. (EMI)</i>	<i>Pedersen</i>	<i>Jim</i>	<i>Lam Research</i>	<i>Juarez</i>	<i>Francisco</i>
<i>Evantec</i>	<i>Conner</i>	<i>Darren</i>	<i>Safety Guru</i>	<i>Sklar</i>	<i>Eric</i>
<i>Exergy Systems, Inc.</i>	<i>Yazdani</i>	<i>Azita</i>	<i>Sargento Lundy</i>	<i>Kerr</i>	<i>Paul</i>
<i>FTD Solutions LLC</i>	<i>Libman</i>	<i>Slava</i>	<i>Self</i>	<i>Rogers</i>	<i>Steve</i>
<i>FTD Solutions LLC</i>	<i>Sullivan</i>	<i>Lindsey</i>	<i>Veolia Water</i>	<i>Dale</i>	<i>Chuck</i>
<i>FTD Solutions LLC</i>	<i>Tharp</i>	<i>Amanda</i>			
<i>Georg Fischer Piping Systems</i>	<i>McIntosh</i>	<i>Bob</i>	SEMI	Nguyen	Laura

Table 2 Leadership Changes

None

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
7285	Line-Item Revision to SEMI F98-0923, Guide for Treatment of Reuse Water in Semiconductor Processing	
L1	Updating KPIs for Water Reuse Rate Calculation	Failed
L2	Water Conservation Accounting	Failed

NOTE 1: **Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

NOTE 2: **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

Table 5 Ratification Ballot Results

None

Table 6 Activities Approved by the GCS between meetings of the TC Chapter

None

Table 7 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
7353	SNARF	High Purity Polymer Materials and Components Task Force	Revision to SEMI F104-0520, Test Method for Evaluation of Particle Contribution of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems, with title change

Table 8 Authorized Ballots

None

Table 9 SNARF(s) Granted a One-Year Extension

None

Table 10 SNARF(s) Canceled

None

Table 11 Standard(s) to receive Inactive Status

None

Table 12 New Action Items

None

Table 13 Previous Meeting Action Items

None



1 Welcome, Reminders, and Introductions

David Kandiyeli (Kinetics) called the meeting to order at 13:05. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings Elements

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion: To accept the previous meeting minutes as written.

By / 2nd: By: vyacheslav Libman / FTD solutions INC
Second: Gary Van Schooneveld / CT Associates, Inc

Discussion: None

Vote: 10-0 in favor. Motion passed.

Attachment: [2025Winter] Liquid Chemicals NA TC Chapter Meeting Minutes

3 Liaison Reports

No updates since Winter 2025 meetings.

4 Ballot Review

NOTE 3: TC Chapter adjudication on ballots reviewed is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment file name for each balloted document is provided under each ballot review section below.

4.1 Document # 7285, Line-Item Revision to SEMI F98-0923, Guide for Treatment of Reuse Water in Semiconductor Processing

4.1.1 Line Item 1: Updating KPIs for Water Reuse Rate Calculation

- The following motions were made during the TC Chapter review:

Negative	SG1-1	5.1.4, §5.2	<i>Negative:</i> Provide a definition for "key performance indicator". <i>Reason/Justification:</i> The term is central to the proposed changes, but has not been defined.
-----------------	-------	----------------	---

Motion: Negative SG1-1 is related and not persuasive.

Reason: No Change: This term is central to several sections of this document that are not part of the proposed changes in this ballot.

By / 2nd: By: Lindsey Sullivan / FTD Solutions
Second: Bob McIntosh / GF Piping Systems

Discussion: CD: appreciate the KPI not defined, but the phrase is a known industry term, it does not need to be defined within the doc

PK: same

Vote: 9-1 in favor. Motion passed.

Negative	SG1-2	5.2.2	Negative: Change “the seawater” to “a seawater”. Reason/Justification: There are multiple such facilities in the world.
-----------------	-------	-------	--

Motion: Negative SG1-2 is related and not persuasive.

Reason: Agreed (if accepted as editorial)

By / 2nd: By: Gary Van Schooneveld / CT Associates, Inc
Second: Alexander Tregub / ATPC

Discussion: None

Vote: 9-1 in favor. Motion passed.

Editorial Change: *incoming water* — semiconductor facility feedwater, typically originating from city water distribution networks, local wells, or dedicated water supply systems (e.g., direct supply from ~~the~~ a seawater desalination plant). This water may be treated or untreated before reaching the semiconductor site and can also include reclaimed water.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Amanda Tharp / FTD Solutions
Second: Alexander Tregub / ATPC

Discussion: None

Vote: 11-0 in favor. Motion passed.

Negative	SG1-3	5.2.2	Negative: Describe from where the “reclaimed water” is foreseen to have been reclaimed. Reason/Justification: One obvious source of reclaimed water is the semiconductor facility itself, but I don't believe that water reclaimed from the semiconductor facility is “incoming”.
-----------------	-------	-------	--

Motion: Negative SG1-3 is related and not persuasive.

Reason: The incoming water can include reclaimed water, which is the secondary use of water external to the semiconductor facility.

By / 2nd: By: Bob McIntosh / GF Piping Systems
Second: Per Nelson / Daikin America, Inc.

Discussion: None

Vote: 11-1 in favor. Motion passed.

Editorial Change: 5.2.2 *incoming water* — semiconductor facility feedwater, typically originating from city water distribution networks, local wells, or dedicated water supply systems (e.g., direct supply from a seawater desalination plant). This water may be treated or untreated before reaching the semiconductor site and can also include reclaimed water from an external source.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Gary Van Schooneveld / CT Associates, Inc
Second: Chuck Dale / Veolia Water

Discussion: None

Vote: 11-0 in favor. Motion passed.

Negative	SG1-4	5.2.6, et al.	Negative: Delete “withdrawal” in two places or state clearly what it adds to the meaning of the paragraph. Reason/Justification: The water is already described as being “incoming”, and “incoming water” has been defined above. From what is “incoming water withdrawal” being withdrawn? One could interpret “incoming water withdrawal” to mean a reduction of incoming water, but the context indicates that's not the correct interpretation.
-----------------	-------	---------------	--

Motion: Negative SG1-4 is related and not persuasive.

Reason: Incoming describes type of water, withdrawal describes the demand by the site (pull of water)

By / 2nd: By: Per Nelson / Daikin America, Inc.
Second: Amanda Tharp / FTD Solutions

Discussion: Editorial change for 'withdrawal' to 'usage' to clarify how to say what was meant of

Vote: 9-1 in favor. Motion passed.



Editorial Change: 5.2.6 *water conservation* — reduction of incoming water ~~usage withdrawal~~. This conservation can include reduction, reuse, recycling, and other methods used to reduce incoming water ~~withdrawal~~ usage.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Eric Sklar / Safety Guru, LLC
Second: Bob McIntosh / GF Piping Systems

Discussion: None

Vote: 9-0 in favor. Motion passed.

Negative	SG1-5	9.6.2.1	Negative: Change "utilizes" to "uses" Reason/Justification: To "utilize" something is to use it for some purpose other than its intended purpose. For example, I use my stapler to attach pieces of paper to each other, but I utilize it as a paperweight.
-----------------	-------	---------	--

Motion: Negative SG1-5 is related and not persuasive.

Reason: Agreed (if accepted as editorial)

By / 2nd: By: Bob McIntosh / GF Piping Systems
Second: Chuck Dale / Veolia Water

Discussion: None

Vote: 10-1 in favor. Motion passed.

Editorial Change: 9.6.2.1 Organic compounds that are not readily biodegradable: manufacturing process ~~utilizes~~ uses various organic compounds. Some of those compounds may require a long time to be removed by the biological process or specially acclimated biomass. Since the POTW design typically does not consider organic speciation of incoming wastewater streams, efficiency of organics removal is not always evaluated and thus the treatment can be impacted.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Eric Sklar / Safety Guru, LLC
Second: Chuck Dale / Veolia Water

Discussion: None

Vote: 11-0 in favor. Motion passed.

Negative	SG1-6	12.1.3	Negative: Do not a third "type" without changing the statement in ¶12.1 that "two types of KPIs are recommended." Reason/Justification: Either the third type is being recommended, or it shouldn't be proposed for addition to F98.
-----------------	-------	--------	---

Motion: Negative SG1-6 is related and not persuasive.

Reason: Agreed to change to "three" types in 12.1 if accepted as editorial.

By / 2nd: By: Gary Van Schooneveld / CT Associates, Inc
Second: Darren Conner / Evantic

Discussion: None

Vote: 6-1 in favor. Motion passed.

Editorial Change: 12.1 To support a consistent approach to water conservation reporting, developing programs, and setting company goals, the following ~~two~~ three types of KPIs are recommended.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Amanda Tharp / FTD Solutions
Second: Bob McIntosh / GF Piping Systems

Discussion: None

Vote: 10-0 in favor. Motion passed.



Negative	SG1-7	12.1.3	Negative: Change the title of §12.1.3 from "Decision Making KPI" to something that distinguishes it from other KPIs. Reason/Justification: My understanding of a "KPI" is that it is "key" because it is the basis of decision making. If a PI is not K, then it is not a KPI. What's worse is that "decision making KPI" can be interpreted as meaning a KPI that makes decisions, which it cannot do, as it isn't sentient.
-----------------	-------	--------	---

Motion: Negative SG1-7 is related and not persuasive.

Reason: KPI is the basis of decision making. There is no such thing as a sentient KPI that makes decisions itself with its own thoughts. Additionally, this is the only KPI that is specific to making a decision, which is why its title is appropriate.

By / 2nd: By: Bob McIntosh / GF Piping Systems
Second: Darren Conner / Evantic

Discussion: ES: it is redundant, My understanding of a "KPI" is that it is "key" because it is the basis of decision making. If a PI is not K, then it is not a KPI. What's worse is that "decision making KPI" can be interpreted as meaning a KPI that makes decisions, which it cannot do, as it isn't sentient.
DK: can you have multiple KPIs that make counteract each other?
CD: yes, there are KPI related to different measurements
LS: this was added to the standard bc things were not being considered with the other two KPI, so this new KPI should be taken in consideration/take precedent
ES: 'decision making kpi' change to 'environmental footprint'

Vote: 9-1 in favor. Motion passed.

Editorial Change: 12.1.3 Type 3 — ~~Decision Making KPI~~ Environmental Footprint

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Eric Sklar / Safety Guru, LLC
Second: Amanda Tharp / FTD Solutions

Discussion: None

Vote: 7-0 in favor. Motion passed.

Negative	SG1-8	12.1.3.1	Negative: Edit this paragraph so that it contains at least one sentence. Reason/Justification: The text between "12.1.3.1" and NOTE 8 is not a sentence. It appears (from the type size) that NOTE 8 consists of a single paragraph, ending before Equation 4 and the explanations of terms therein. I have, however, seen instances in which a multi-paragraph NOTE was improperly formatted, so that the paragraphs other than the first were in 10 pt (the size used for body text) rather than 9 pt (the size used for NOTES).
-----------------	-------	----------	--

Motion: Negative SG1-8 is related and not persuasive.

Reason: Make this into a sentence by adding "This KPI addresses" to the beginning of the sentence to add a verb.

By / 2nd: By: Chuck Dale / Veolia Water
Second: Alexander Tregub / ATPC

Discussion: None.

Vote: 9-1 in favor. Motion passed.

Editorial Change: 12.1.3.1 ~~This KPI addresses~~ Addressing the environmental footprint trade-offs between water usage and other factors, such as energy, emissions, and chemicals, etc.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Bob McIntosh / GF Piping Systems
Second: Eric Sklar / Safety Guru, LLC

Discussion: None

Vote: 11-0 in favor. Motion passed.

Negative	SG1-9	NOTE 8	Negative: This NOTE is part of Line Item 1, but it refers to Appendix 4, which (according to the Background Statement) is part of Line Item 2. That makes the Line Items interdependent. Reason/Justification: SEMI does not allow Line Items to be interdependent. Consider what would happen if LI 1 were to pass and LI 2 were to fail.
-----------------	-------	--------	---

Motion: Negative SG1-9 is related and not persuasive.

Reason: Ballot labeling was incorrect and removing the text referencing to Appendix 4 would no longer be interdependent to Line 2

By / 2nd: By: Amanda Tharp / FTD Solutions
Second: Alexander Tregub / ATPC

Discussion: None.

Vote: 9-1 in favor. Motion passed.

Editorial Change: NOTE 8: This KPI framework is designed to evaluate the environmental trade-offs of different solutions (e.g., chemical-intensive vs. chemical-free UPW systems, ~~an example of which is described in the case study in Appendix 4~~) to support decision-making at the planning or operational phases of semiconductor facilities. The goal is to achieve best-in-class environmental performance within location-specific constraints.

Motion: To approve editorial change(s) as shown on the screen.

By / 2nd: By: Amanda Tharp / FTD Solutions
Second: Alexander Tregub / ATPC

Discussion: ES: I don't think this fixes the problem

Vote: 7-1 in favor. Motion passed.

- The committee found the below negative related and technically persuasive. The ballot failed and returned to the task force for re-work and re-ballot.

Negative	SG1-10	Eq. 4	Negative: Provide an equation that is not oversimplified to the point of being incorrect. Reason/Justification: There's a subscript "l" on "C", strongly suggesting that there is more than one "C" to be considered. That makes sense, as it is extremely unlikely that two or more chemicals have the same energy conversion factor. I have similar concerns about "WW" and "n", both of which are described as being plural.
-----------------	--------	-------	--

Motion: Negative SG1-10 is related and persuasive.

By / 2nd: By: Eric Sklar / Safety Guru, LLC
Second: Chuck Dale / Veolia Water

Discussion: CD: equation needs further consideration and refinement and the committee finds this negative persuasive.

Vote: 5-0 in favor. Motion passed.

4.1.2 Line Item 2: Water Conservation Accounting

- The committee found the negative related and technically persuasive. The ballot failed and returned to the task force for re-work and re-ballot.

Negative	SG2-1	5.2.3	Negative: Explain or remove "slow leak purges,". Reason/Justification: Neither I nor my friend Google know what a "small leak purge" is.
-----------------	-------	-------	---

Motion: Negative SG2-1 is related and persuasive.

By / 2nd: By: Eric Sklar / Safety Guru, LLC
Second: Steven Rogers /

Discussion: None

Vote: 6-0 in favor. Motion passed.



- Final Action vote:

Motion: Line item(s) [1] and [2] failed TC Chapter review and will be returned to the TF for rework.

By / 2nd: By: Eric Sklar / Safety Guru, LLC
Second: Chuck Dale / Veolia Water

Discussion: None

Vote: 4-0 in favor. Motion passed.

Attachment: 02-25-Liquid Chemicals Ballot Results

5 Subcommittee and Task Force Reports

None were presented at this meeting. Refer to Winter 2025 meetings for the latest reports.

6 Old Business

6.1 SNARF(s)

SEMI F104 SNARF went out for a two-week review and needs to be approved by TC Chapter. Motion below:

Motion: Approve the SNARF Revision to SEMI F104-0520, Test Method for Evaluation of Particle Contribution of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems, with title change to: Specification for Particle Contribution of Components Used in Ultrapure Water and Liquid Chemical Distribution Systems

By / 2nd: By: Steven Rogers /
Second: Chuck Dale / Veolia Water

Discussion: None

Vote: 5-0 in favor. Motion passed.

7 New Business

None

8 Next Meeting and Adjournment

8.1 The SEMI Standards NA Summer Meetings 2025 are tentatively scheduled for June 2-5, 2025, at SEMI HQ in Milpitas, California. Schedule details TBD. Please check www.semi.org/standards for updates.

Adjournment: 16:00.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

Phone: +1.408.943.7019

Email: lnguyen@semi.org



Minutes tentatively approved by:

Don Hadder (Intel), Co-chair	<Date approved>
David Kandiyeli (KESG), Co-chair	<Date approved>
Laura Ledenbach (Evonik), Co-chair	<Date approved>

Minutes approved by: **LChem NA OVTCCM on June 3, 2025.**

Table 14 Index of Available Attachments^{#1}

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meetings Elements	02-25-Liquid Chemicals Ballot Results
[2025 Winter] Liquid Chemicals NA TC Chapter Meeting Minutes	SNARF Revision to SEMI F104-0520

#1 Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at www.semi.org. For additional information or to obtain individual attachments, please contact Laura Nguyen at the contact information above.